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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,204	07/05/2005	Yuichiro Tani	273435US0PCT	7682

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EXAMINER

PUTTLITZ, KARL J

ART UNIT	PAPER NUMBER
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1621

DATE MAILED: 04/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/541,204

Applicant(s)

TANI ET AL.

Examiner

Karl J. Puttlitz

Art Unit

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 5-10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>Various</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Objections***

Claims 5-10 are objected to under 37 CFR 1.75(c) as being in improper form because multiple dependent claims 5 and 10 cannot depend on other multiple dependant claims. See MPEP § 608.01(n).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim1 recites that R<sup>1</sup> can be an aralkyl group *consisting of* an aryl group having 6 to 12 carbon atoms. The term "consisting of" renders the claims indefinite since it excludes any element not subsequently specified, see M.P.E.P. § 2111.03. Here, an the alkyl portion of aralkyl would be excluded, and thus the structure of the recited aralkyl group is unclear. Amending the claim to replace "consisting of" for "with" would overcome the rejection.

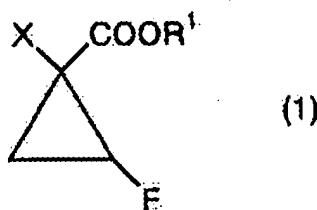
***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 01657418 (JP 418) in view of Rolla et al., Sodium Borohydride Reactions under Phase-Transfer Conditions: Conversion of Halides and Sulphonate Esters to Alkanes; J. Org. Chem., 1981, 46, 3909-3911 (Rolla).

The rejected claims are drawn to a method of producing 2-fluorocyclopropane-1-carboxylic acid ester, which comprise allowing a compound represented by the following formula (1):



[See definitions in claim1]

to react with a reducing agent in the presence of a phase transfer catalyst.

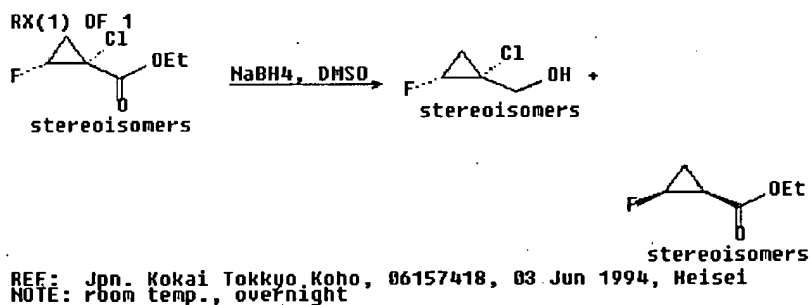
The rejected claims also cover those embodiments wherein X in the formula (1) is a chlorine atom.

The rejected claims also cover those embodiments wherein  $R_1$  in the formula (1) is an alkyl group having 1 to 8 carbon atoms.

The rejected claims also cover those embodiments wherein the phase transfer catalyst is a quaternary ammonium salt.

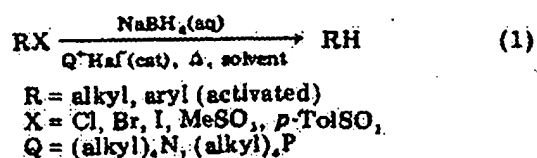
The rejected claims also cover those embodiments wherein quaternary ammonium salt is tetrabutylammonium bromide.

With regard to the above embodiments, JP 418 teaches preparation of fluorocyclopropanes comprising reaction of cyclopropane compounds with sodium borohydride. The reaction is depicted below:



See Chemical Abstracts online citation [retrieved 11 April 2006] from STN, Columbus OH, USA. T-butyl esters are exemplified, see Id.

JP 418 fails to teach a phase transfer catalyst, specifically, a quaternary ammonium salt, such as tetrabutylammonium bromide. It is for this proposition that the examiner joins Rolla. In this regard Rolla teaches conversions of halides to alkanes. Specifically, Rolla teaches the following reaction:



See page 3909, left column.

In relation to this reaction, Rolla teaches that the reaction is carried out by addition of  $\text{NaBH}_4$  to a stirred solution of substrate and tetraoctylammonium bromide as catalyst. Tetrabutylammonium bromide is also exemplified; see Table II, page 3910. Those of ordinary skill would have been motivated to modify JP418 to include the required phase transfer catalysts since Rolla teaches that these catalysts are effective, stable at reaction conditions and quantitatively recovered, see page 3909, left column. Therefore, the rejected claims are prima facie obvious since the combination of JP418 and Rolla teach or suggest the elements of these claims with a reasonable expectation of success.

Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 418 in view of Rolla as applied to claims 1 and 5 above, and further in view of *Kirk-Othmer Encyclopedia of Chemical Technology* Copyright © 1993 by John Wiley & Sons, Inc. pp. 1-10 (Kirk Othmer).

Claims 7-9 require the presence following phase transfer catalysts: tetrabutylammonium chloride, tetrabutylammonium hydrogen sulfate and trioctylmethylammonium chloride. JP 418 and Rolla fail to explicitly teach these catalysts. However, Kirk Othmer demonstrates that various quaternary ammonium salts (page 2) are used as phase transfer catalysts such as tetrabutylammonium halides (page 4). Therefore, Kirk Othmer demonstrates that the use of the required catalysts is well within the motivation of those of ordinary skill, and therefore, prima facie obvious.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl J. Puttlitz whose telephone number is (571) 272-0645. The examiner can normally be reached on Monday to Friday from 9 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter, can be reached at telephone number (571) 272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Karl J. Puttlitz  
Assistant Examiner